2010-06-01 Tuesday Morning Notes

Monday, May 31, 2010
9:45 AM

Stacking

- Stacking Numbers
  - <stacking rate>= 23.8 mA/hr
  - <production>=18.8 pbar/Mp
  - <beam on target> = 8.1 Tp
- Friday established stacking after the Booster downtime.
- AP0 Air Flow
  - Air handler motor was replaced.
- Water leak on air handling unit at AP50
  - Duty Personnel fix.
- Debuncher Extraction kicker timing made an excursion.
  - Resart DCE11 to
- Excursions in the P3 helium dewar
  - Impacting stacking
  - Cryo made some adjustments
- Stacking is somewhat down.
  - Experts were in Sunday and Monday working on it.
  - It appears that the longitudinal size of the beam in the Debuncher is larger than normal.
  - We believe the problem is internal to Pbar and probably in the Debuncher.
  - It would be nice if MI could verify bunch rotation and beam, etc...

Transfers

- Unstacked 1760 (ave. 440) in 216 transfers over 70 sets with an average efficiency of 94.8%

Studies & Downtime

- Priority: Look at Debuncher Momentum system
  - Need up to 1 hour with no stacking beam.
- Stacktail Phasing with 30e10 - looking for opportunistic non-stacking time
- Stacktail tank moving - parasitic
- Jim Morgan would like to change beamline C204 limits based on calculations using the model. We will be doing one plane of one beamline at a time.

The Numbers

  - Stacking
  - Pbars stacked: 1733.07 E10
  - Time stacking: 78.21 Hr
  - Average stacking rate: 22.16 E10/Hr

- Uptime
  - Number of pulses while in stacking mode: 120993
  - Number of pulses with beam: 116375
  - Fraction of up pulses was: 96.18%

- The uptime's effect on the stacking numbers
  - Corrected time stacking: 75.23 Hr
  - Possible average stacking rate: 23.04 E10/Hr
  - Could have stacked: 1801.84 E10/Hr

- Recycler Transfers

- Pbars sent to the Recycler: 1741.55 E10
- Number of transfers : 214
- Number of transfer sets: 70
- Average Number of transfer per set: 3.06
- Time taken to shoot including reverse proton tuneup: 00.75 Hr
- Transfer efficiency: 94.67%

- Other Info
  - Average POT : 8.07 E12
  - Average production: 18.45 pbars/E6 protons

Elog Quotes

- MCR
  - Friday
    - 23:35:58- AP5001 appeared on the alarm screen. It was polling on D31. Ops had to go out and reboot it locally. t all is well
      Pasted from <http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2010&action=view&page=402&frame=2&anchor=&hilite=>
    - 23:39:15- We received 2 AP0 air monitor alarms at 22:45. D:ARHEPA and D:ARFL1. The are for the EF3 Air Flow and APO EF3 HEPA Filter Pressure indicators. Darren is in contact with Tont Leveling and Gary Lauten. - KPM
      -- Sat May 29 00:00:17 comment by...DJC -- The air flow is 50 cfm, which should nominally be 200 cfm, and the filter pressure is 0 InWC (nominally 0.3). Gary had us contact Joel Fulgham to come in and check rates while FESS investigates and repairs the motor/blower. We have halted stacking adn are waiting in the rates to decay on G:RD2072. Tony informs us the AP0 chipmunk is showing an increase in the airborne radiation.
      Pasted from <http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2010&action=view&page=402&frame=2&anchor=&hilite=>
  - Saturday
    - 00:21:25- Joel Fulgham will be here in about an hour to check radiation rates at AP0. Ops have contacted the duty mechanic who will diagnose and repair the air handler unit after Joel give the OK to enter the building. Cons has been paged. - je
      -- Sat May 29 00:49:15 comment by...je -- AP0 rates are fine for access. Joel Fulgham will check radiation rates in Pre-Vault for access to fix a blower if necessary.
      -- Sat May 29 00:59:50 comment by...je -- D:RD2072 now reads 200cpm. Pre-Vault keys have been issued to Joel Fulgham and duty personel. Bob Mau and Steve Werkema are aware of our current situation. Paul Czarapata has been paged.
      -- Sat May 29 01:09:45 comment by...je -- Paul Czarapata is aware of our situation.
      -- Sat May 29 01:58:57 comment by...je -- Duty personnel have not found anything wrong in Pre-Vault. They are currently attempting to see if there is a problem upstairs. Joel Fulgham is going home as Gary Lauten has given permission to make access to Pre-Vault without Joel's escort.
      -- Sat May 29 02:22:52 comment by...je -- Duty Personnel are having trouble getting into Metasys to control the blower unit. Ops have contacted Cedric Madison who is helping them from home.
      -- Sat May 29 03:11:19 comment by...je -- Cedric has found that the variable speed drive in AP0 is bad. This part is not readily available for changeout, so he suggests that we bypass it entirely until it can be replace next week. When normally running, the variable speed drive limits the blower motor to 80% workload. Gary Lauten has authorized that we run with the variable speed drive bypassed as long as we keep alarms unbypassed and as long as it runs below 250cfm.
      -- Sat May 29 04:18:03 comment by...je -- Duty personnel again suspect that the problem may be in the tunnel. They have blown a few fuses attempting to run the blower without the variable speed drive. It's possible that during maintenence of the exhaust fan on Tuesday, something may have changed which was not found on initial inspection tonight.
      
      -- Sat May 29 06:55:22 comment by...je -- Duty personnel were able to find a new air handler motor and are in the tunnel now removing the old and installing the new.
      Pasted from <http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2010&action=view&page=403&frame=2

&anchor=&hilite=>

- 07:50:55- Duty personnel have finished working on the air handler unit at AP0. The variable speed drive was found to be good. Everything should be running normally now. Stacking will resume after keys to Pre-Vault have been returned.
  Pasted from <http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2010&action=view&page=403&frame=2&anchor=&hilite=>
- 10:35:32- Rebooted DCE11 because the debuncher Extraction kicker scope parameters were not updating. After the reboot, parameters are now updating.
  Pasted from <http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2010&action=view&page=404&frame=2&anchor=&hilite=>
- 13:40:05- Dave Peterson reported that there is a fair amount of water on the floor at AP50. Ops are en route to take a look.
  Pasted from <http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2010&action=view&page=404&frame=2&anchor=&hilite=>
- 14:56:02- We have confirmed that the leak at AP50 us indeed that AP50 chilled water skid that is used to cool the 4-8 TWTS as well as DRF1. In order to repair this we are going into standby and putting both the TWTs and DRF1 into a safe state.

  After consulting with DVM we have turned D:R1LLTT, set D:ALLOW2-7 to 0 from 1, set D:ENABC2-7 to 0 from 1 and Changed the D:R!HT02 parameters as documented below.
  D:R1HT02 from 49.57 to 5
  D:R1HT03 from 40.39 to 5
  D:R1HT04 from 61.57 for 5
  D:R1HT05 from 47.84 to 5
  D:R1HT06 from 51.37 to 5
  D:R1HT07 from 60.78 to 5. - fish
  -- Sat May 29 16:08:59 comment by...jdc -- Repairs are complete. We are returning to stacking.
  Pasted from <http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2010&action=view&page=404&frame=2&anchor=&hilite=>
- 18:04:23- We have had several Pbar cryo alarms come onto the alarm screen. We talked to CHL and they are going to contact Jerry Makara.
  Pasted from <http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2010&action=view&page=404&frame=2&anchor=&hilite=>
- 21:51:55- Ops spoke with Steve from CHL about the Pbar Debuncher cryo system. They were able to stabilize the fridge by adjusting the house control loop setpoint of PREVUH from 5 to 10.
  - je
  -- Sat May 29 22:08:16 comment by...je -- That setpoint adjustment was for the input variable DT16 which controls EVUH.
  Pasted from <http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2010&action=view&page=405&frame=2&anchor=&hilite=>
- Fri May 28 14:32:54- **Stacking Returns**: Stacking was stopped on Thursday around 10:30am to derime the struggling Pbar Frig. First stacking beam at a reduced cycle time was established this morning around 4:30am when half of the Debuncher cyro amps had permits to turn on. A normal stacking cycle time was established after we were able to turn on all Debuncher cryo amps around 5:40am. After about 30 minutes of running,tuning, and chaising a drifting cryo notch filter, we stacked briefly at around 24mA/hr with production around 21 pbar/Mp before beam went away from 6:11am until about 6:54am due to some MI ramp card downtime. Beam was run a few more minutes before being turned off at 7am in preparation for a Booster access. At that point we were sitting on just over 26mA in the stack. The Booster access finished up before noon, but B:CHOP downtime prevented stacking. B:CHOP was back around 14:05, but stacking beam could still not be established due to Klystron #4 bulk quad power supply problems. A couple of stacking pulses were run starting at 14:10 until a Linac rad tripped a few times turning beam back off. After upstream machines tuned up to run, we went back to stacking at reduced intensity around 14:25. Experts are working on raising intensities. Over the last ~28 hours we only have 26.4mA to show for it! - B Drendel
  Pasted from <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar10&action=view&page=156&frame=2&anchor=&hilite=&load=>
- Fri May 28 14:44:06- D:TGTCHK was stuck at 0.0. Sent a reset to the MACALC parameter and it started updating again.

Pasted from <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar10&action=view&page=156&frame=2&anchor=&hilite=&load=>

- Saturday

  Sat May 29 10:54:03- **D:EKIK Timing**:

  Earlier ops found the D:EKIK timing way off. I found the D:EKIK scope parameters stopped updating yesterday evening and the auto-tune continued to correct on the stale data. I had ops kill the auto-tune since we are having problem with the scope parameters, and had them restart DCE11. Now the scope parameters are updating again, but we just restarted DCE11 yesterday so I wouldn't be surprised if we have further problems talking to the scope over the weekend. If D:EKTUNE comes into alarm then the usual manual timing tune-up is in order. Otherwise we can just watch the web scope interface.

  Pasted from <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar10&action=view&page=157&frame=2&anchor=&hilite=&load=>

- Monday

- Pbar
  - Friday
    - Fri May 28 13:25:47- The D:IKIK scope web interface was down. A power cycle brought it back to life. Once stacking returns, we'll want to verify that the D:IKIK scope parameters on P60 INJ <23> resume updates

      Pasted from <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar10&action=view&page=156&frame=2&anchor=&hilite=&load=>
  - Saturday
  - Sunday
  - Monday
- Cryo
  - Friday

    -- Fri May 28 06:25:16 comment by...Geynisman -- All Debuncher cryo amps were on and resuming normal stacking by 5:45 am.

    -- Fri May 28 07:05:21 comment by...L. DeRoo -- S. Hentges has been paged to look at Pbar wet engine.

    -- Fri May 28 07:17:36 comment by...L. DeRoo -- The Cryo Calendar says that S. Hentges is on vacation.

    -- Fri May 28 08:46:56 comment by...jnm -- R.Michals checked both engines as good. Efficiency PRSPDE 88 in/0 out - 65%; PRSPWE 59 in/17 put = good.

    -- Fri May 28 12:51:02 comment by...Pei --
    After tuning up PBar WET engine's control LOOP, Maximum error tolearance to 1.5 from 1.0 and Minumum position to 650 from 400, the PRPI13 and P1TR12 are more stable now. The ~ 80 rpm offset is too biger between WET engine's setting and read back speed, might need adjust it in the future.

    -- Fri May 28 13:16:11 comment by...JNM -- PREVLN control set onto TI5 via loop-19 and loop-9 is DISABLE/INACTIVE.

    Pasted from <http://www-bdcryo.fnal.gov/cryoelog/cgi-bin/elog.pl?nb=CRII&action=view&page=last&frame=2&anchor=&hilite=>
  - Saturday
    - 18:35:30 PRSPWE alarmed, as well as PRPI16 as a result of PREVUH (also alarmed); CHL set loop-3 PREVUH set_value to 10 psid from 5 thus closing it. We probably had changed that during cooldown earlier in week.

      Pasted from <http://www-bdcryo.fnal.gov/cryoelog/cgi-bin/elog.pl?nb=CRII&action=view&page=last&frame=2&anchor=&hilite=>
    - Sat May 29 13:54:43- The Debuncher 50 House BPM crate's last module had a bad 3.3V regulator. I swapped the module after calling the MCR about the water on the floor at the east end of the building. - Dave Peterson

      Pasted from <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar10&action=view&page=157&frame=2&anchor=&hilite=&load=>
    - -- Sat May 29 18:34:50 comment by...DVM -- As the result of the fridge problems, the third

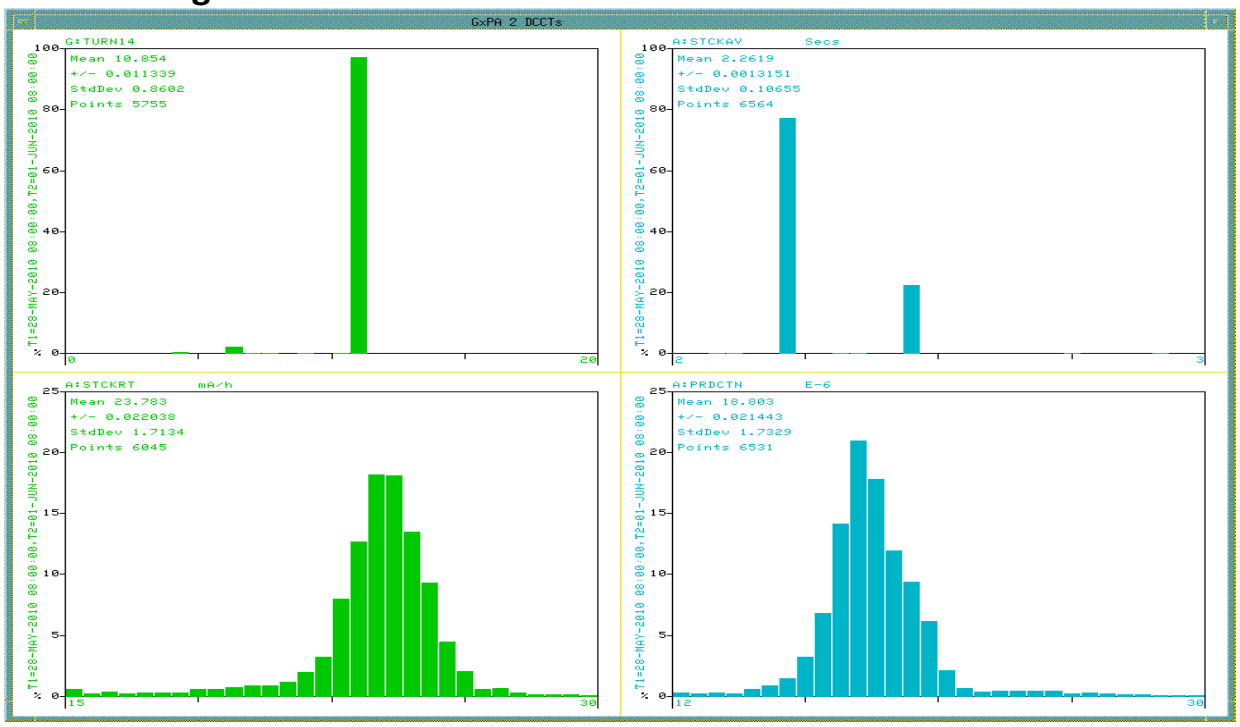
stacktail filter was way off. I have re-centered it for now, but I suspect this problem will be back.
Pasted from <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar10&action=view&page=157&frame=2&anchor=&hilite=&load=>

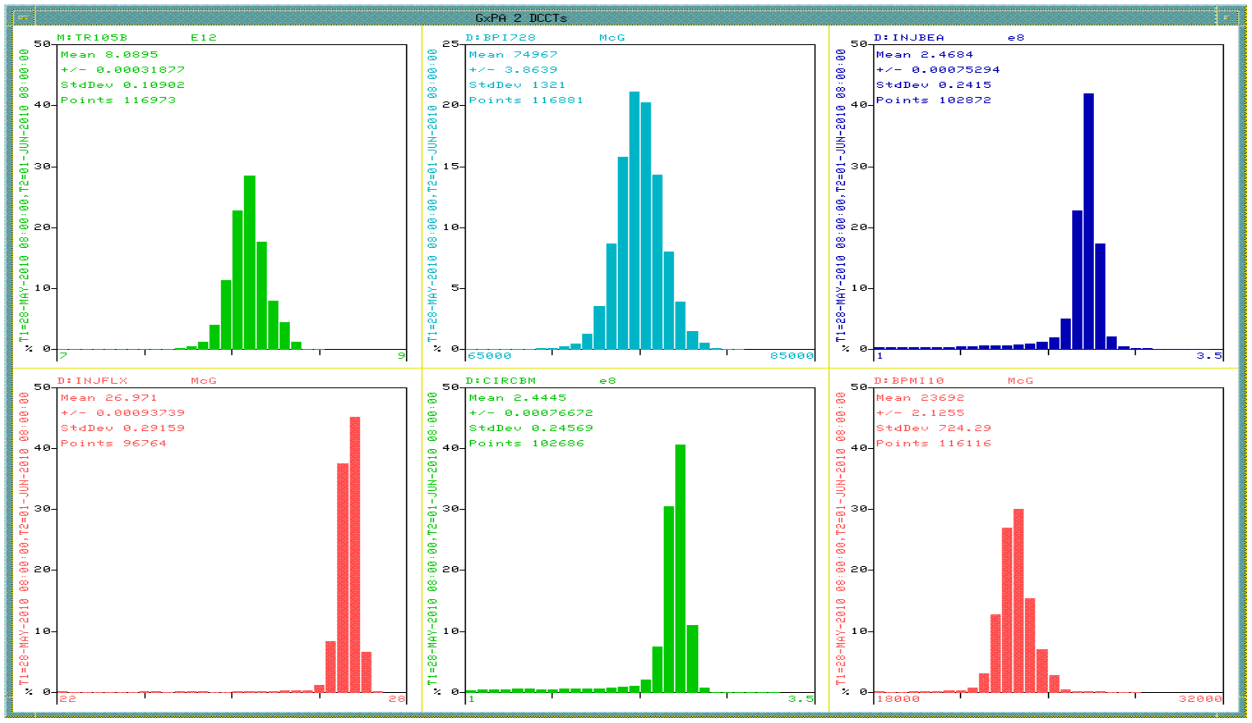
- Sunday\
  - Sun May 30 19:14:13- Looked at many things today that might contribute to the stacking problems. My best guess right now is the beam coming out of the Debuncher is much larger longitudinally than normal. Both the display on channel 17 and the VSA show this. Also, the larger than normal ARF1 bucket request makes me suspicious. I am worried that something is different with momentum filter #2 since it was repaired. - DVM
    Pasted from <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar10&action=view&page=157&frame=2&anchor=&hilite=&load=>
- Monday

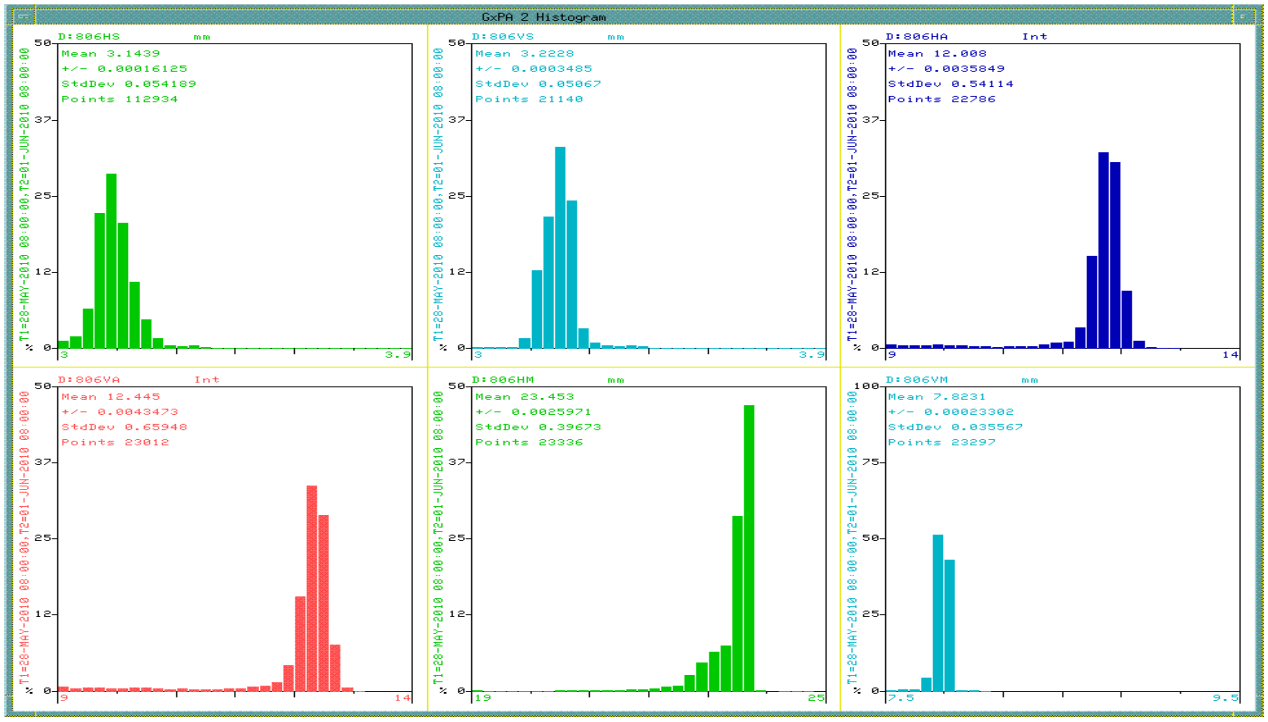
- Run Co
  - Friday
  - Saturday
    - Sat May 29 00:36:53-
      The AP0 pressure and air flow came into alarm at 22:40. OPs talked with Pbar and ES&H personnel. Stacking was halted to allow AP0 a 1 hour cool off period. ES&H personnel were en route to the site at the end of the evening shift. We received 2 AP0 air monitor alarms at 22:45. D:ARHEPA and D:ARFL1. The are for the EF3 Air Flow and APO EF3 HEPA Filter Pressure indicators. The air flow is 50 cfm, which should nominally be 200 cfm, and the filter pressure is 0 InWC (nominally 0.3). Normally the AP0 build is run at a slightly positive pressure forcing the air back through the vault and in the prevault and pretarget enclosures. Without the positive pressure air borne radiation works is way back in the AP0 building instead of the Pre vault/Pretage lines were it would normally decay harmlessly away. Experts are about 45 mins out and depending on the repair we could be down for another 1-2 hours. We'll have a better idea as to the the repairs will be once we can get into the building. They will need access into the prevault enclosure to look at the air handling unit located in front of the vault.
      - Cons
      -- Sat May 29 00:51:58 comment by...Cons -- For now it only looks like we need to access the PreVault enclosure. If for what ever reason we need to access the Pretarget enclosure then the store would need to be terminated.
      -- Sat May 29 03:55:35 comment by...Cons -- Experts have found that the variable speed drive in AP0 is bad. This part is not readily available for changeout, so he suggests that we bypass it entirely until it can be replace next week. When normally running, the variable speed drive limits the blower motor to 80% workload. Rad safety has authorized that we run with the variable speed drive bypassed as long as we keep alarms unbypassed and as long as it runs below 250cfm.
      -- Sat May 29 07:05:47 comment by...Cons -- Repairs continue on the AP0 air handling unit, it appears that we may still have a problem in the tunnel. Earlier this morning attempting to run the blower without the variable speed drive a series of fuses were blown. Currently they are working on reconfiguring the system such that they stop blowing fuses. At this time we have no estimate.
      Pasted from <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=runco&action=view&page=1745&frame=2&anchor=&hilite=&load=>
    - Sat May 29 07:20:00- It looks like the problem AP0 air handle unit problem was traced to a bad motor which is currently being replaced. - Cons
    - Sat May 29 07:25:17- Due to the over night problems at AP0 our collider plan will need to change. As soon as we get back to stacking we'll have a better idea were we stand with respect a target stash size. - Cons
    - Sat May 29 08:00:25- **AP0 Air handle issues**
      Experts have finished the repairs on the air handler unit at AP0. It turns out that he variable speed drive was just fine, and all of our problems were due to a bad blower motor. So, we are currently running under our normal configuration. Stacking has resumed.... - Cons
      Pasted from <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=runco&action=view&page=1745&frame=2&anchor=&hilite=&load=>

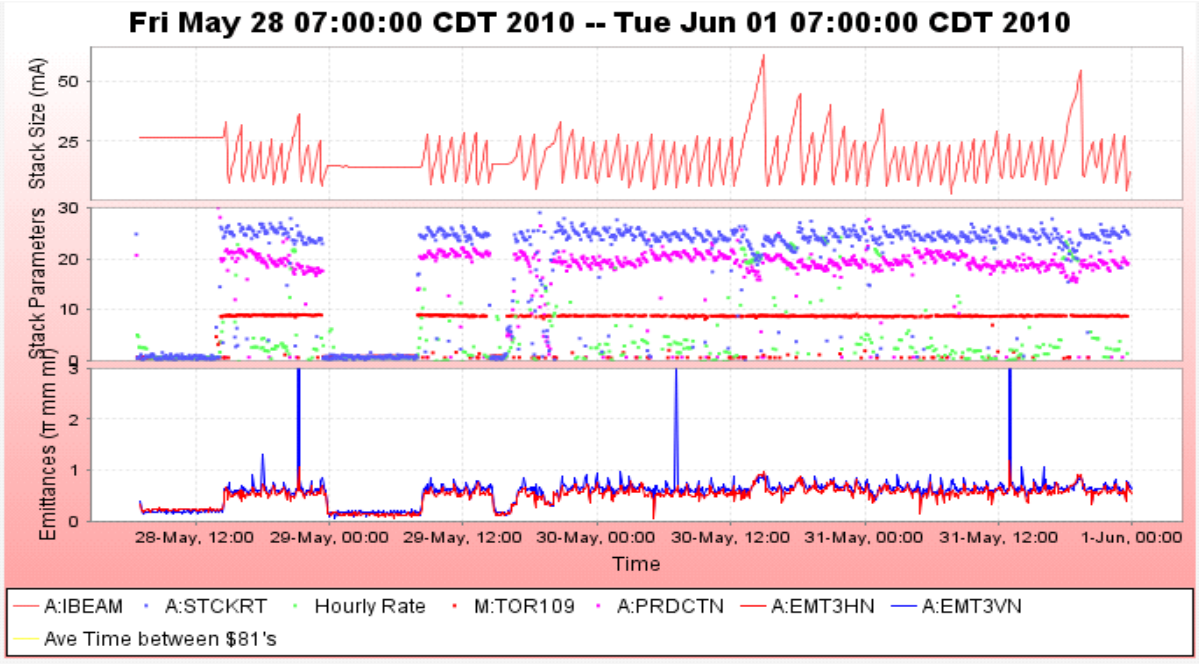
- Sunday
- Monday

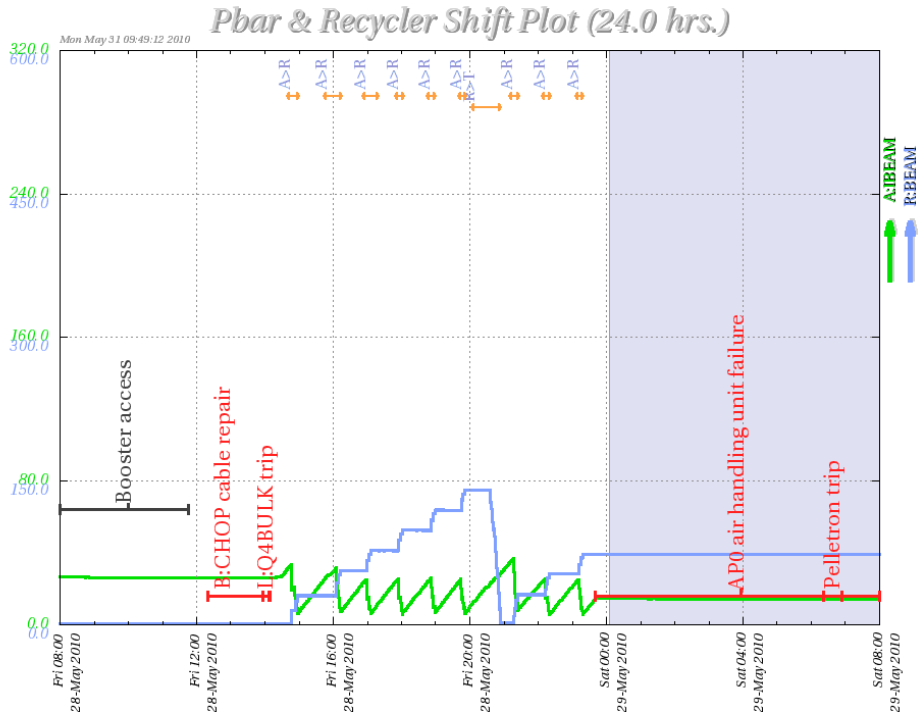
The Stacking Plots



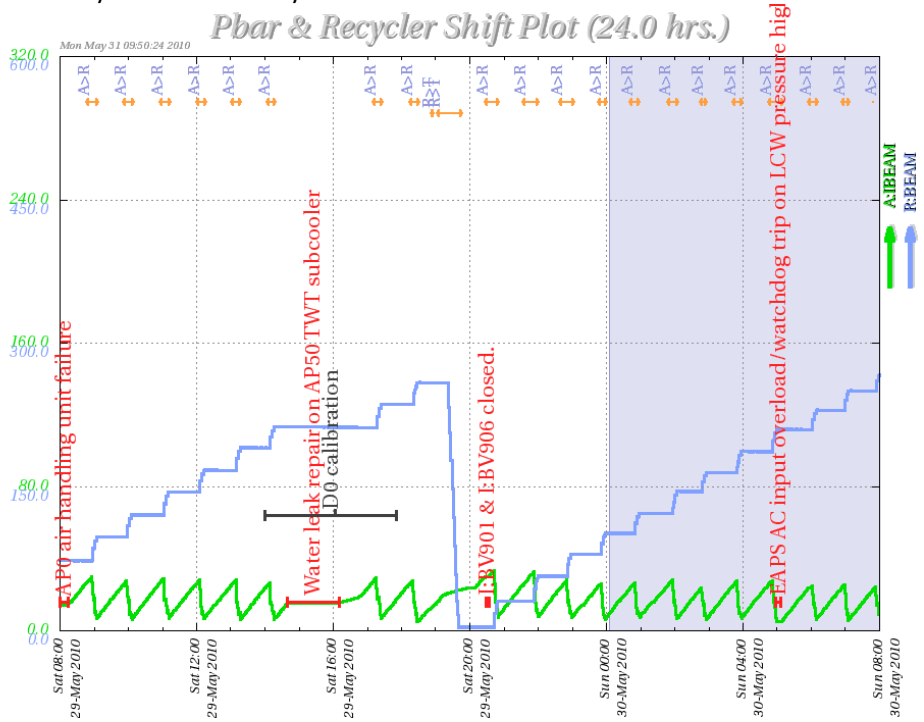



CxPA 2 Histogram
D:806HS mm
Mean 3.1439
+/- 0.0016125
StdDev 0.054189
Points 112934
D:806VS mm
Mean 3.2228
+/- 0.0003485
StdDev 0.05067
Points 21140
D:806HA Int
Mean 12.008
+/- 0.0035849
StdDev 0.54114
Points 22786
D:806VA Int
Mean 12.445
+/- 0.0043473
StdDev 0.65948
Points 23012
D:806HM mm
Mean 23.453
+/- 0.0025971
StdDev 0.39673
Points 23336
D:806VM mm
Mean 7.8231
+/- 0.00023302
StdDev 0.035567
Points 23297

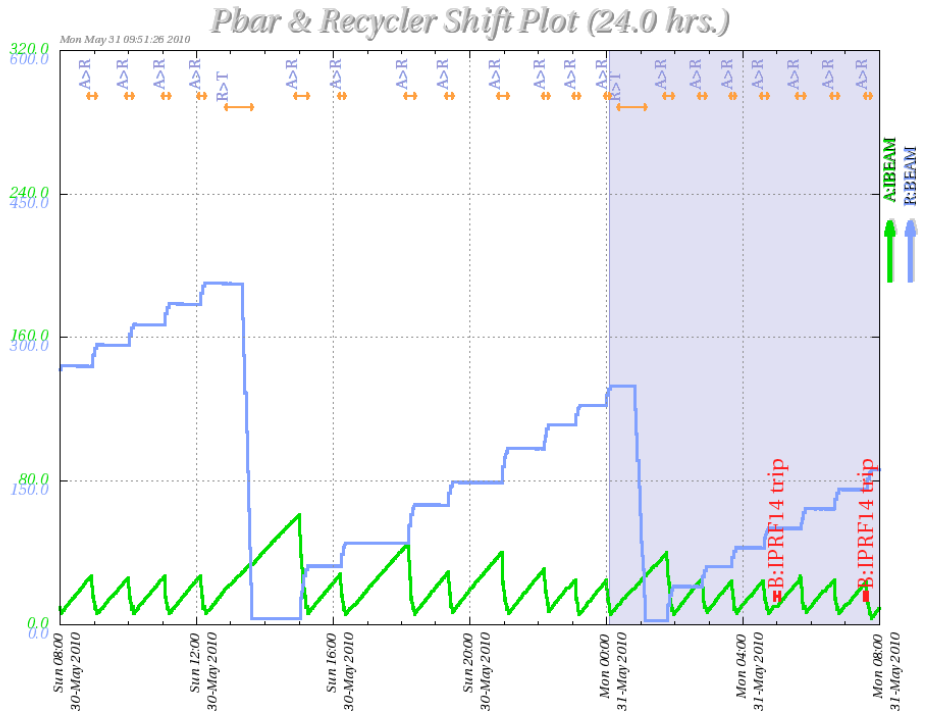

Fri May 28 07:00:00 CDT 2010 -- Tue Jun 01 07:00:00 CDT 2010
Stack Size (mA)
Stack Parameters
Emittances (π mm mr)
28-May, 12:00
29-May, 00:00
29-May, 12:00
30-May, 00:00
30-May, 12:00
31-May, 00:00
31-May, 12:00
1-Jun, 00:00
Time
A:IBEAM
A:STCKRT
Hourly Rate
M:TOR109
A:PRDCTN
A:EMT3HN
A:EMT3VN
Ave Time between $81's



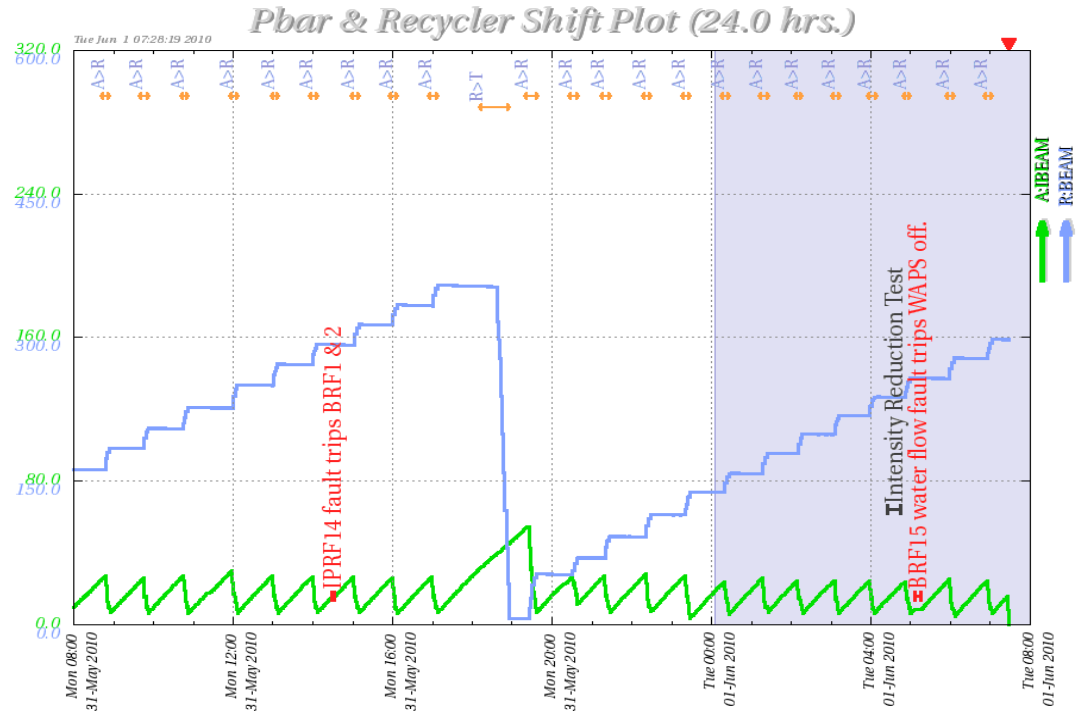
0800 Friday to 0800 Saturday



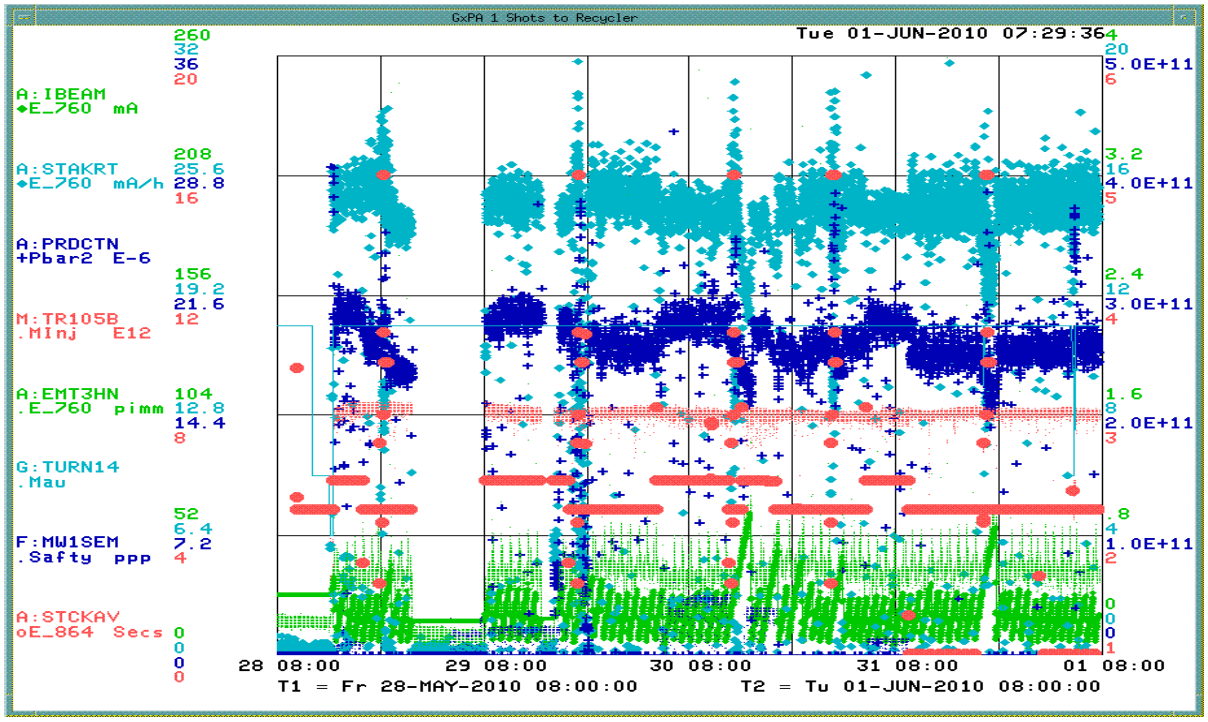
0800 Saturday to 0800 Sunday

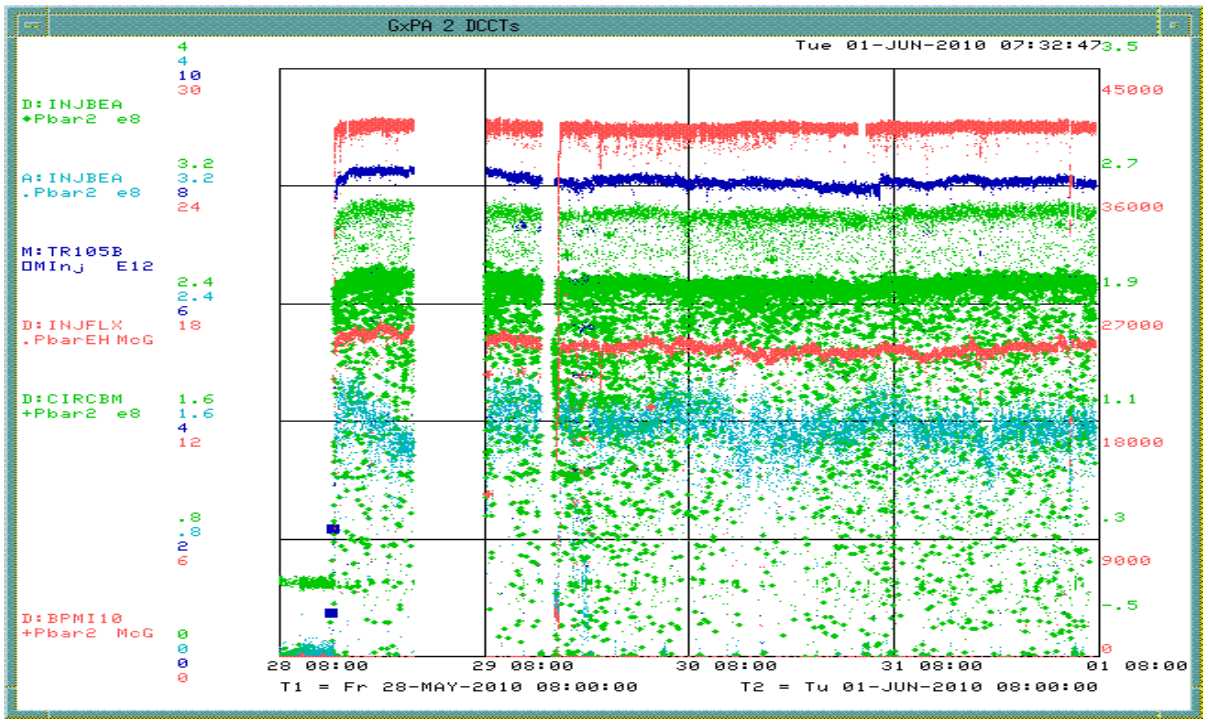


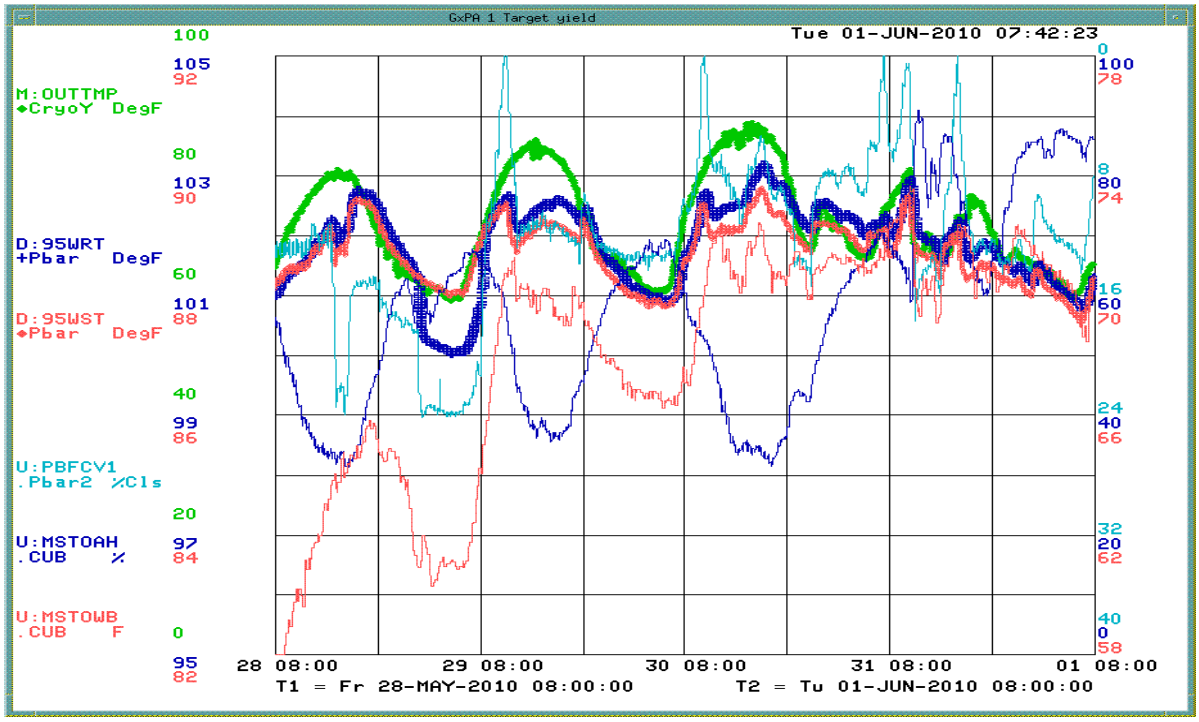
0800 Sunday to 0800 Monday

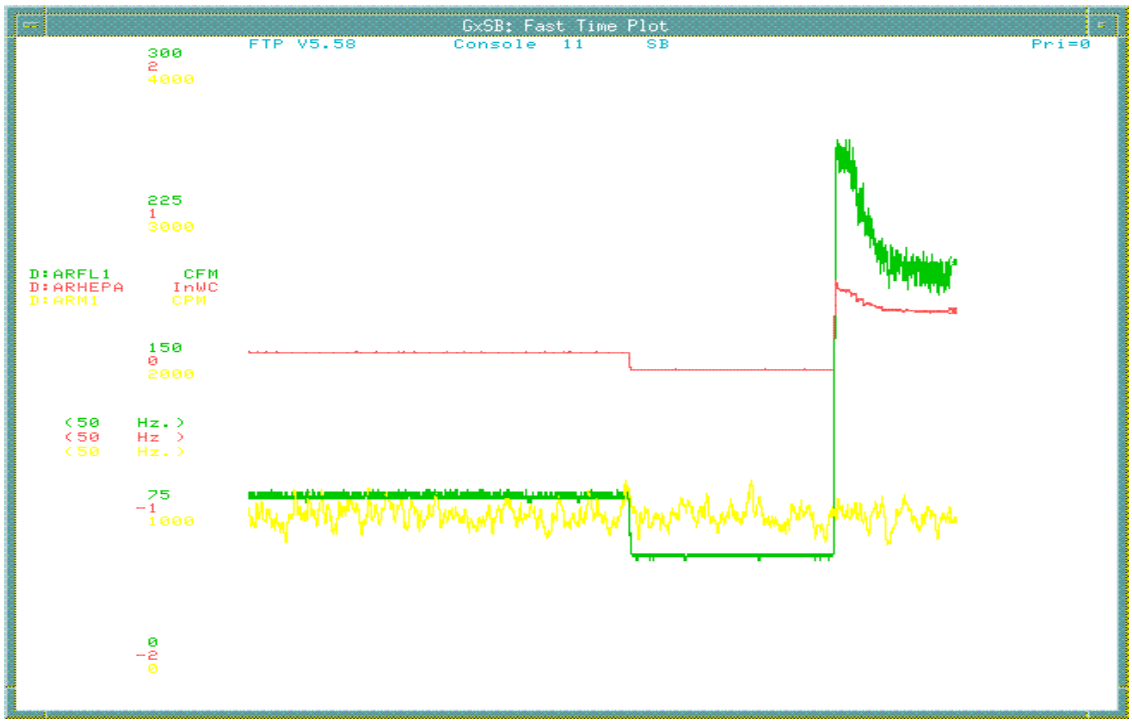


0800 Monday - 0800 Tuesday

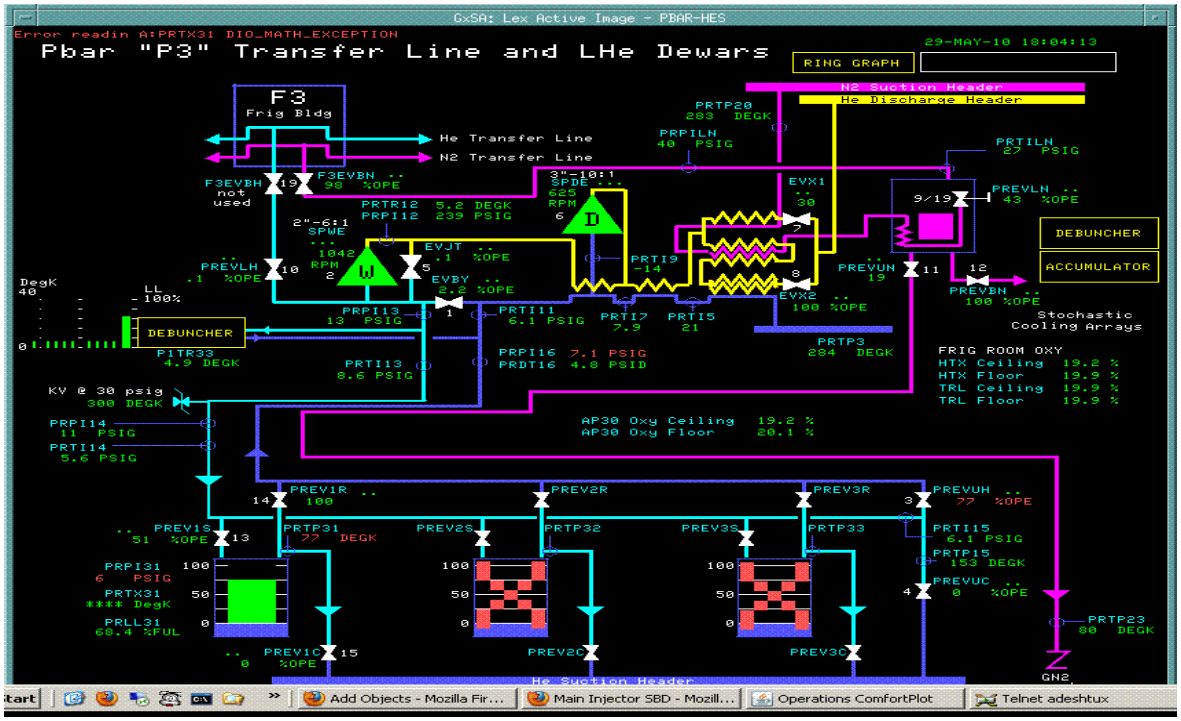

GxPA 1 Shots to Recycler
Tue 01-JUN-2010 07:29:36
A:IBEAM
E_760 mA
A:STAKRT
E_760 mA/h
A:PRDCTN
Pbar2 E-6
M:TR105B
.MInj E12
A:EMT3HN
.E_760 pimm
G:TURN14
.Mau
F:MW1SEM
.Safty ppp
A:STCKAV
oE_864 Secs
28 08:00
29 08:00
30 08:00
31 08:00
01 08:00
T1 = Fr 28-MAY-2010 08:00:00
T2 = Tu 01-JUN-2010 08:00:00

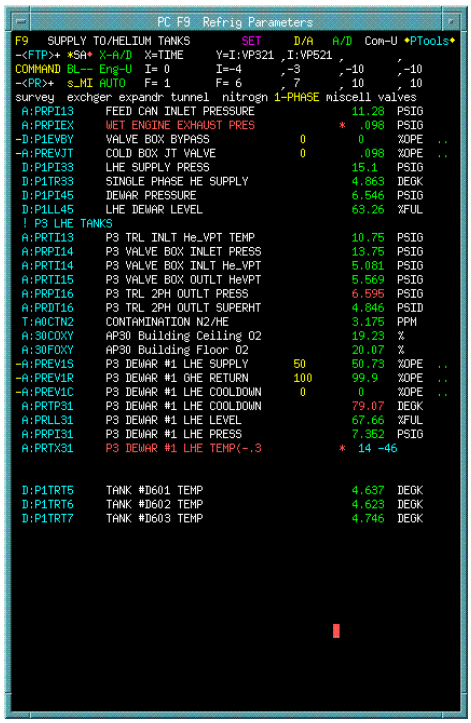

GxPA 2 DCCTs
Tue 01-JUN-2010 07:32:47
D:INJBEA
Pbar2 e8
A:INJBEA
.Pbar2 e8
M:TR105B
MInj E12
D:INJFLX
.PbarEH McG
D:CIRCBM
Pbar2 e8
D:BPMI10
Pbar2 McG
28 08:00
29 08:00
30 08:00
31 08:00
01 08:00
T1 = Fr 28-MAY-2010 08:00:00
T2 = Tu 01-JUN-2010 08:00:00



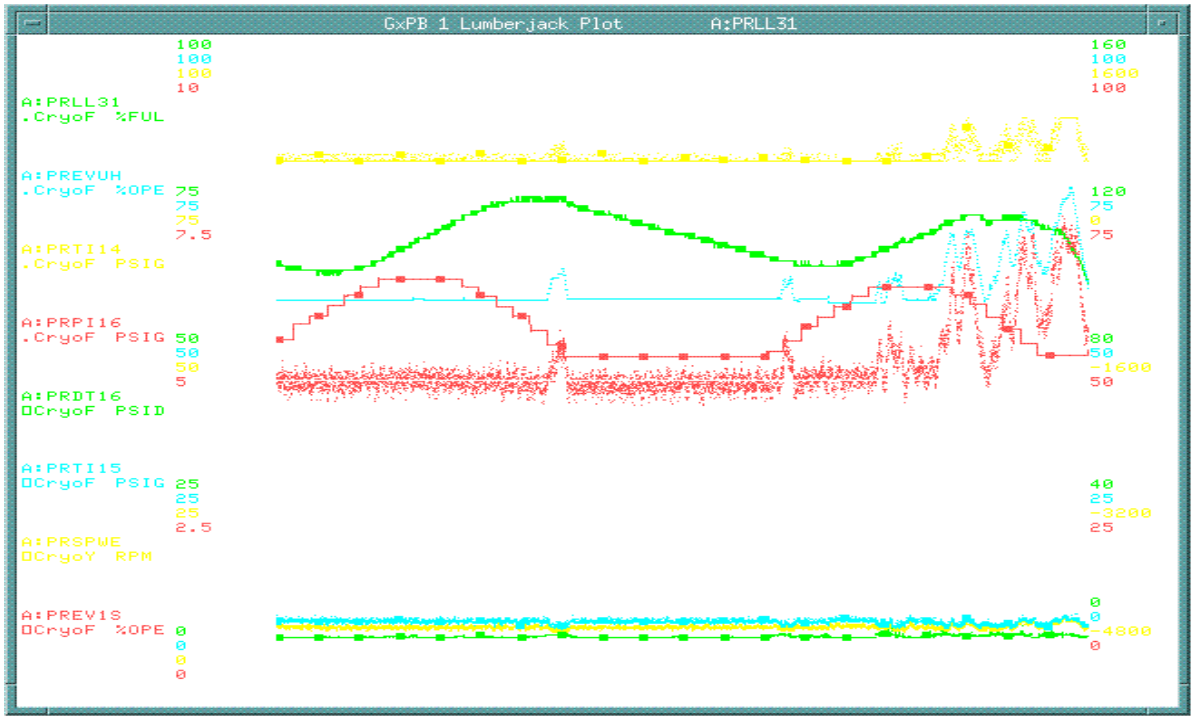


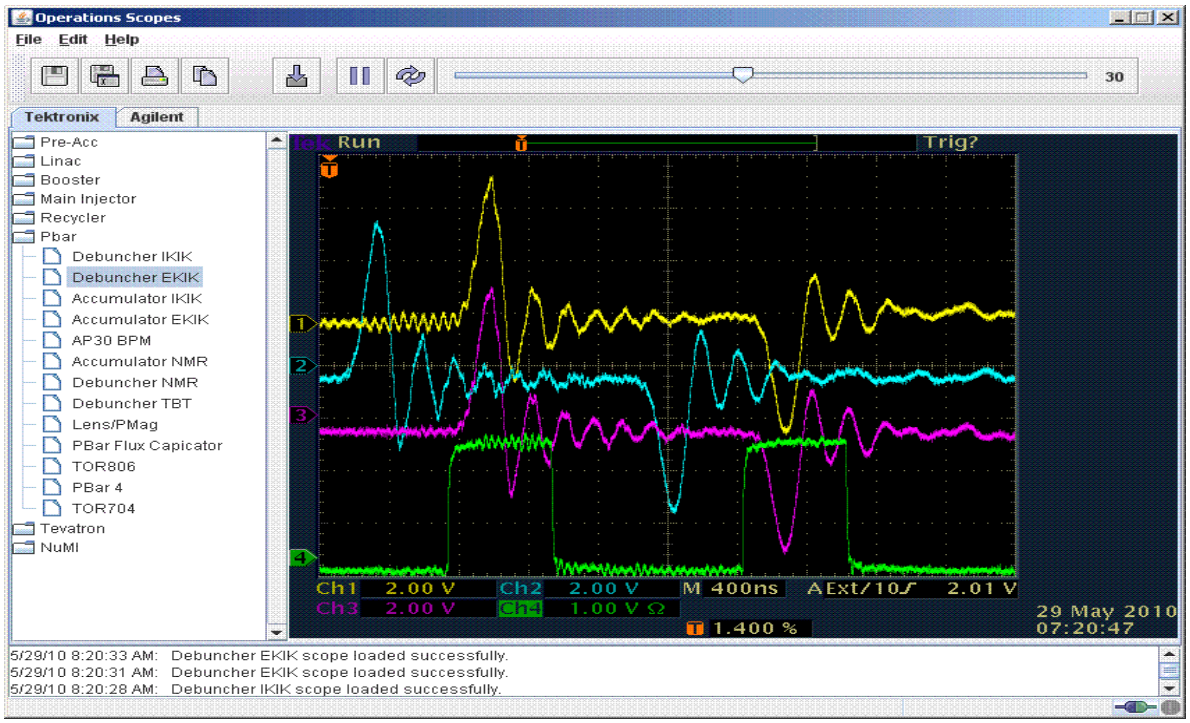
AP0 air handler fixed

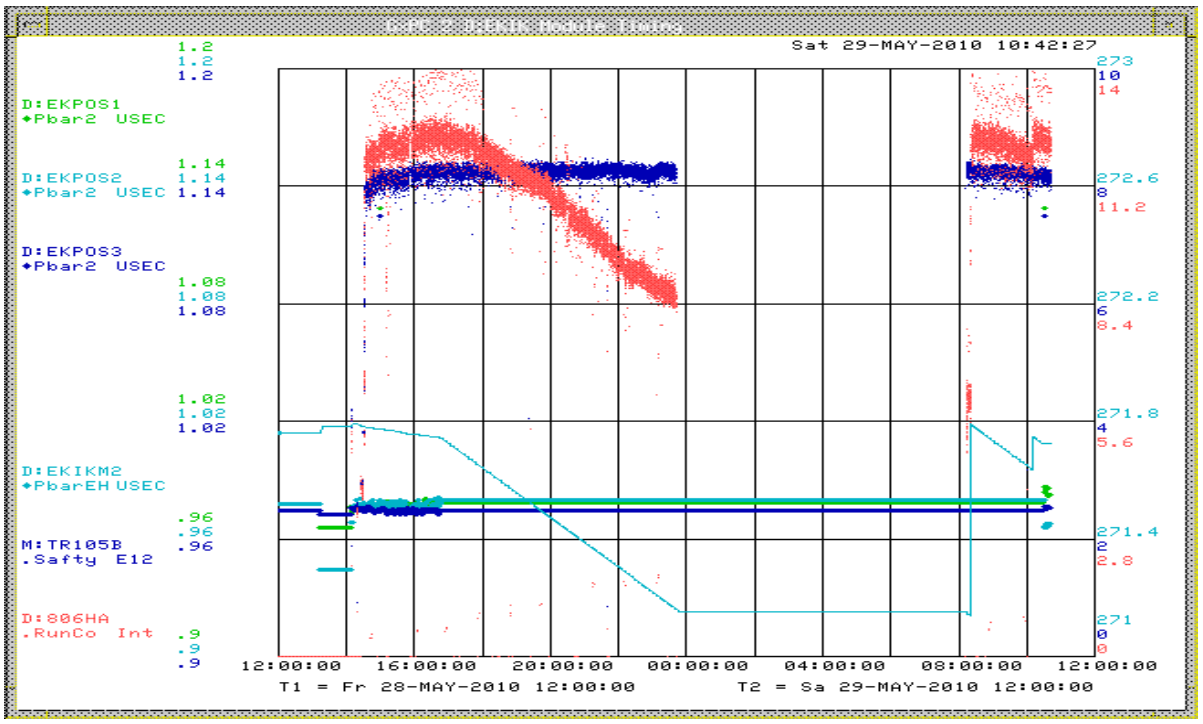

GxSA: Lex Active Image - PBAR-HES
Error readin A:PRTX31 DIO_MATH_EXCEPTION
Pbar "P3" Transfer Line and LHe Dewars
29-MAY-10 18:04:13
RING GRAPH
F3
Frig Bldg
He Transfer Line
N2 Transfer Line
N2 Suction Header
He Discharge Header
DEBUNCHER
ACCUMULATOR
Stochastic
Cooling Arrays
FRIG ROOM OXY
HTX Ceiling 19.2 %
HTX Floor 19.9 %
TRL Ceiling 19.9 %
TRL Floor 19.9 %
AP30 Oxy Ceiling 19.2 %
AP30 Oxy Floor 20.1 %
He Suction Header
Add Objects - Mozilla Fir...
Main Injector SBD - Mozill...
Operations ComfortPlot
Telnet adeshtux

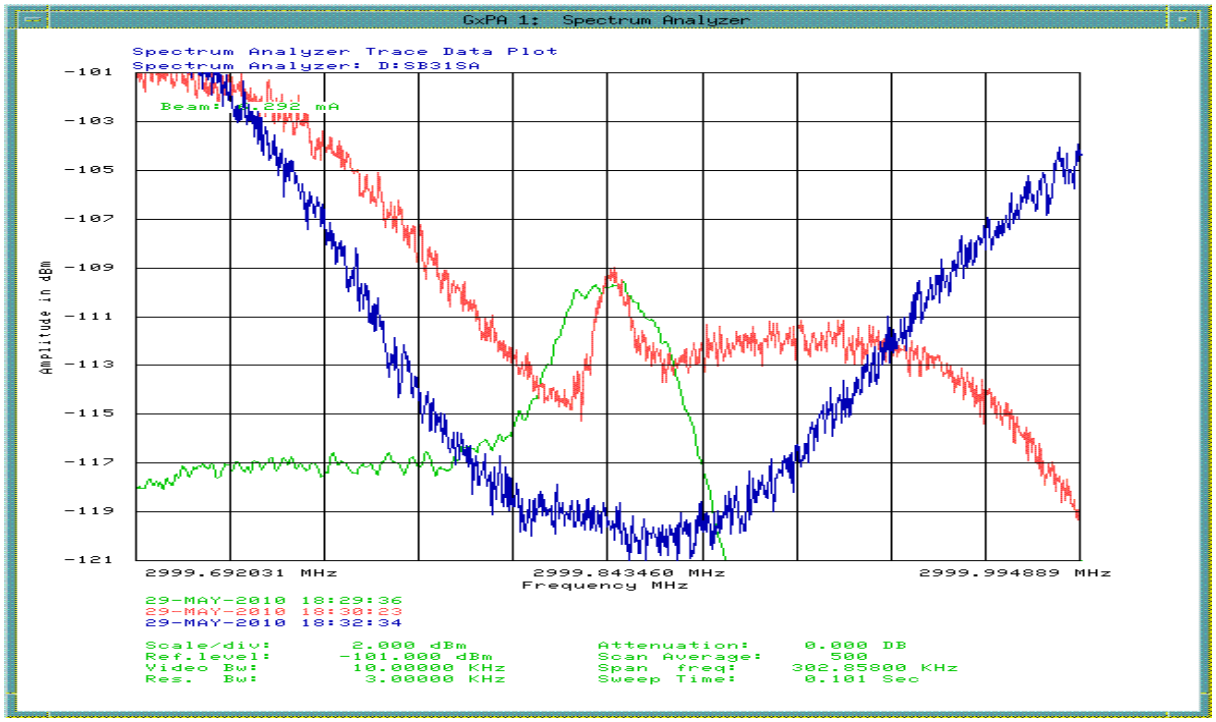

PC F9 Refrig Parameters
F9 SUPPLY TO/HELIUM TANKS SET D/A A/D Com-U *PTools*
survey exchger expandr tunnel nitrogn 1-PHASE miscell valves
! P3 LHE TANKS

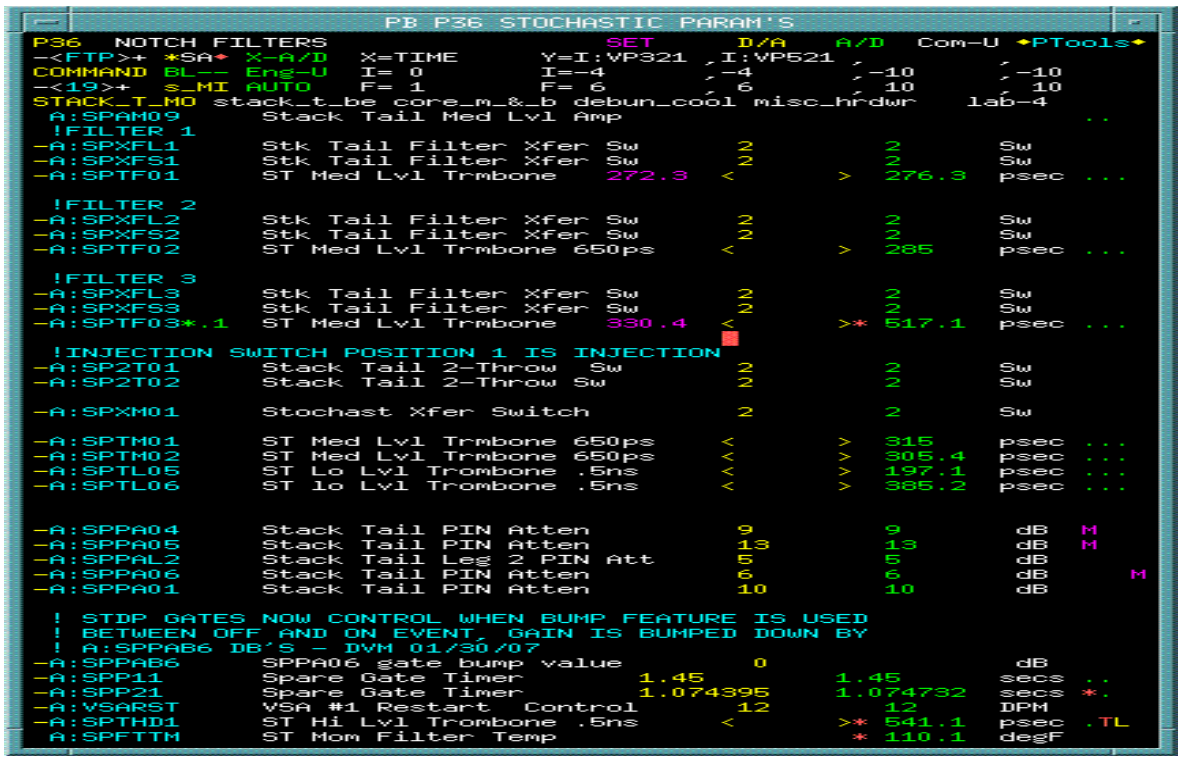
Frig

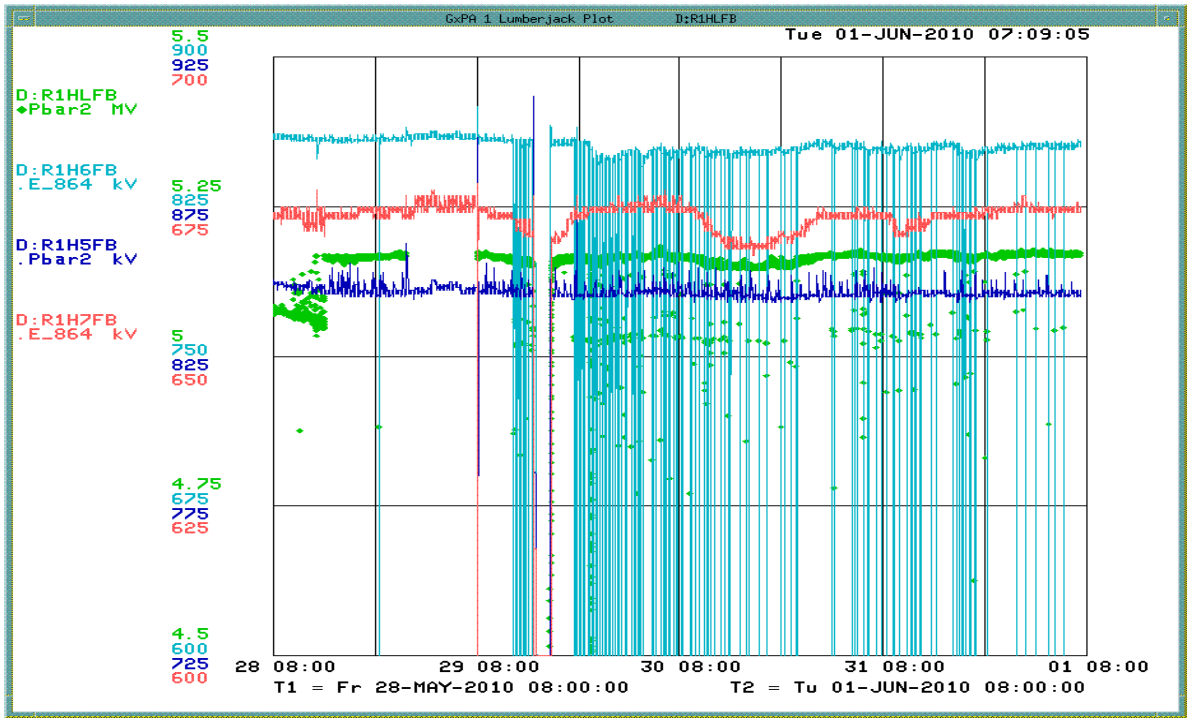

GxPB 1 Lumberjack Plot
A:PRLL31
A:PRLL31
.CryoF %FUL
A:PREVUH
.CryoF %OPE
A:PRTI14
.CryoF PSIG
A:PRPI16
.CryoF PSIG
A:PRDT16
DCryoF PSID
A:PRTI15
DCryoF PSIG
A:PRSPWE
DCryoY RPM
A:PREV1S
DCryoF %OPE

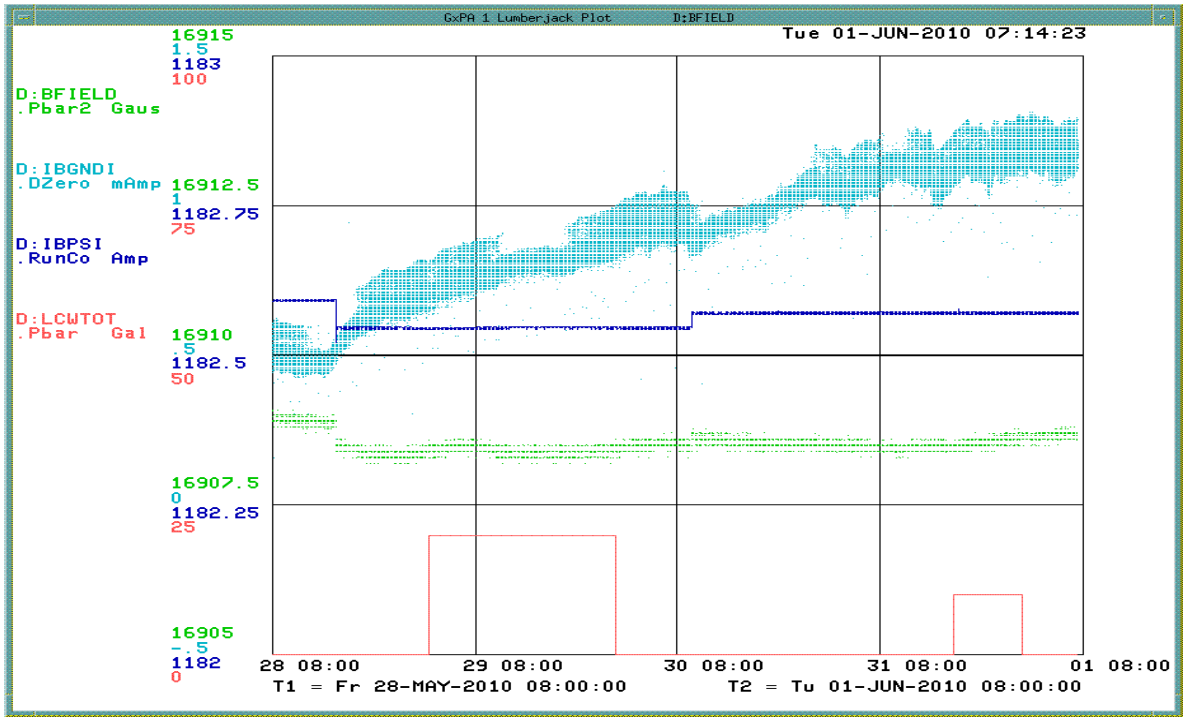

Operations Scopes
File Edit Help
Tektronix
Agilent
Pre-Acc
Linac
Booster
Main Injector
Recycler
Pbar
Debuncher IKIK
Debuncher EKIK
Accumulator IKIK
Accumulator EKIK
AP30 BPM
Accumulator NMR
Debuncher NMR
Debuncher TBT
Lens/PMag
PBar Flux Capicator
TOR806
PBar 4
TOR704
Tevatron
NuMI
Tek Run
Trig?
Ch1 2.00 V
Ch2 2.00 V
M 400ns
AExt/10
2.01 V
Ch3 2.00 V
Ch4 1.00 V Ω
1.400 %
29 May 2010
07:20:47
5/29/10 8:20:33 AM: Debuncher EKIK scope loaded successfully.
5/29/10 8:20:31 AM: Debuncher EKIK scope loaded successfully.
5/29/10 8:20:28 AM: Debuncher IKIK scope loaded successfully.

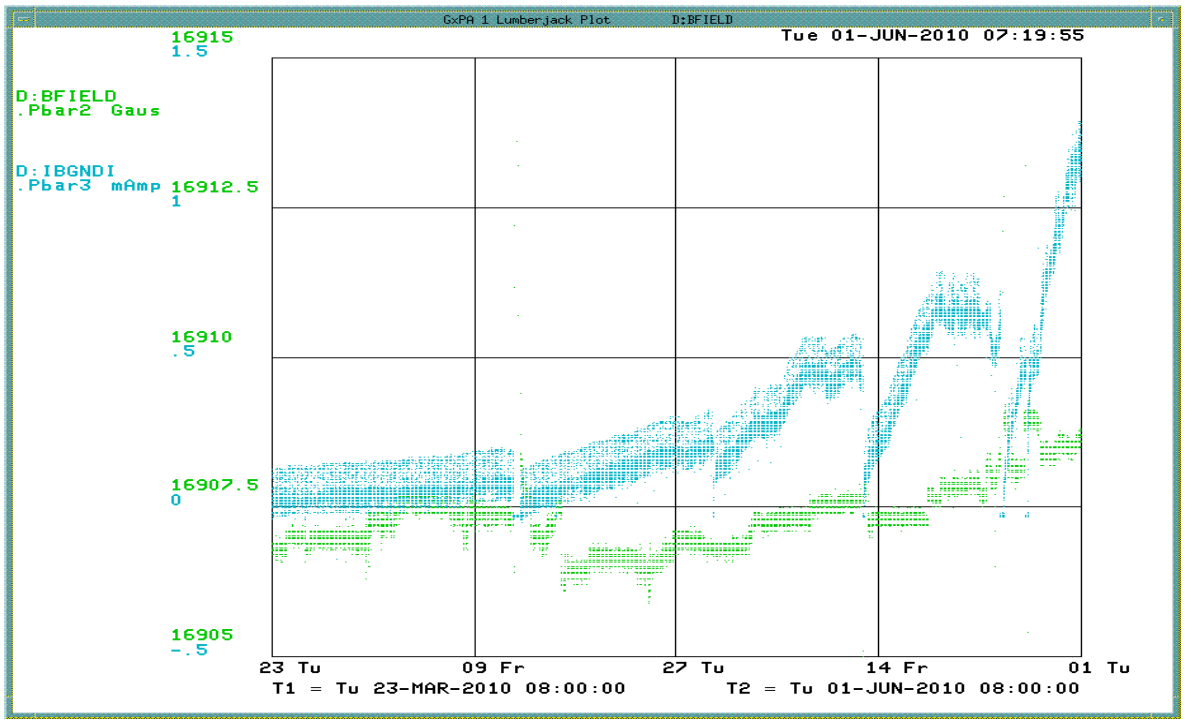

Sat 29-MAY-2010 10:42:27
D:EKPOS1
•Pbar2 USEC
D:EKPOS2
•Pbar2 USEC
D:EKPOS3
•Pbar2 USEC
D:EKIKM2
•PbarEH USEC
M:TR105B
.Safty E12
D:806HA
.RunCo Int
12:00:00 16:00:00 20:00:00 00:00:00 04:00:00 08:00:00 12:00:00
T1 = Fr 28-MAY-2010 12:00:00
T2 = Sa 29-MAY-2010 12:00:00

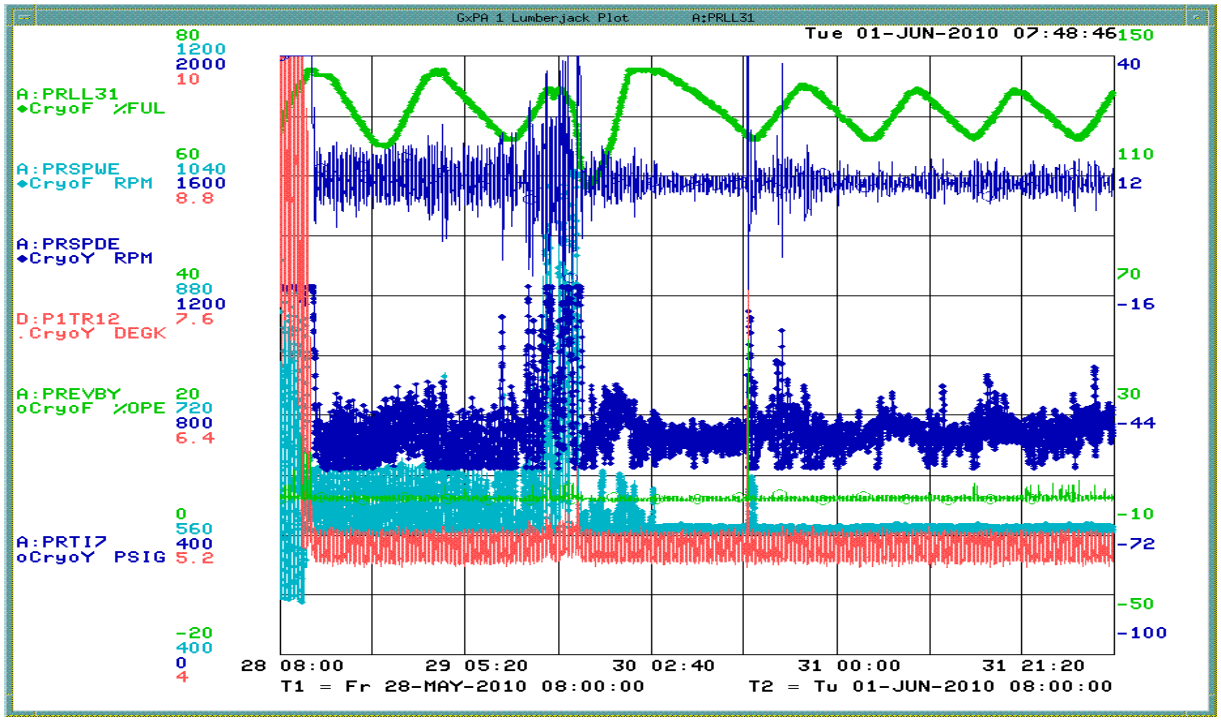

CxPA 1: Spectrum Analyzer
Spectrum Analyzer Trace Data Plot
Spectrum Analyzer: D:SB31SA
Amplitude in dBm
2999.692031 MHz
2999.843460 MHz
2999.994889 MHz
Frequency MHz
29-MAY-2010 18:29:36
29-MAY-2010 18:30:83
29-MAY-2010 18:32:34
Scale/div: 2.000 dBm
Ref.level: -101.000 dBm
Video Bw: 10.00000 KHz
Res. Bw: 3.00000 KHz
Attenuation: 0.000 DB
Scan Average: 500
Span freq: 302.85800 KHz
Sweep Time: 0.101 Sec


PB P36 STOCHASTIC PARAM'S
P36 NOTCH FILTERS SET D/A A/D Com-U ◆PTools◆
-<FTP>+ *SA◆ X-A/D X=TIME Y=I:VP321 ,I:VP521 , ,
COMMAND BL-- Eng-U I= 0 I=-4 ,-4 ,-10 ,-10
-<19>+ s_MI AUTO F= 1 F= 6 , 6 , 10 , 10
STACK_T_MO stack_t_be core_m_&_b debun_cool misc_hrdwr lab-4
A:SPAM09 Stack Tail Med Lvl Amp ..
!FILTER 1
-A:SPXFL1 Stk Tail Filter Xfer Sw 2 2 Sw
-A:SPXFS1 Stk Tail Filter Xfer Sw 2 2 Sw
-A:SPTF01 ST Med Lvl Trmbone 272.3 < > 276.3 psec ...
!FILTER 2
-A:SPXFL2 Stk Tail Filter Xfer Sw 2 2 Sw
-A:SPXFS2 Stk Tail Filter Xfer Sw 2 2 Sw
-A:SPTF02 ST Med Lvl Trmbone 650ps < > 285 psec ...
!FILTER 3
-A:SPXFL3 Stk Tail Filter Xfer Sw 2 2 Sw
-A:SPXFS3 Stk Tail Filter Xfer Sw 2 2 Sw
-A:SPTF03*.1 ST Med Lvl Trmbone 330.4 < >* 517.1 psec ...
!INJECTION SWITCH POSITION 1 IS INJECTION
-A:SP2T01 Stack Tail 2-Throw Sw 2 2 Sw
-A:SP2T02 Stack Tail 2-Throw Sw 2 2 Sw
-A:SPXM01 Stochast Xfer Switch 2 2 Sw
-A:SPTM01 ST Med Lvl Trmbone 650ps < > 315 psec ...
-A:SPTM02 ST Med Lvl Trmbone 650ps < > 305.4 psec ...
-A:SPTL05 ST Lo Lvl Trombone .5ns < > 197.1 psec ...
-A:SPTL06 ST lo Lvl Trombone .5ns < > 385.2 psec ...
-A:SPPA04 Stack Tail PIN Atten 9 9 dB M
-A:SPPA05 Stack Tail PIN Atten 13 13 dB M
-A:SPPAL2 Stack Tail Leg 2 PIN Att 5 5 dB
-A:SPPA06 Stack Tail PIN Atten 6 6 dB M
-A:SPPA01 Stack Tail PIN Atten 10 10 dB
! STDP GATES NOW CONTROL WHEN BUMP FEATURE IS USED
! BETWEEN OFF AND ON EVENT, GAIN IS BUMPED DOWN BY
! A:SPPAB6 DB'S - DVM 01/30/07
-A:SPPAB6 SPPA06 gate bump value 0 dB
-A:SPP11 Spare Gate Timer 1.45 1.45 secs ..
-A:SPP21 Spare Gate Timer 1.074395 1.074732 secs *.
-A:VSARST VSA #1 Restart Control 12 12 DPM
-A:SPTHD1 ST Hi Lvl Trombone .5ns < >* 541.1 psec .TL
A:SPFTTM ST Mom Filter Temp * 110.1 degF

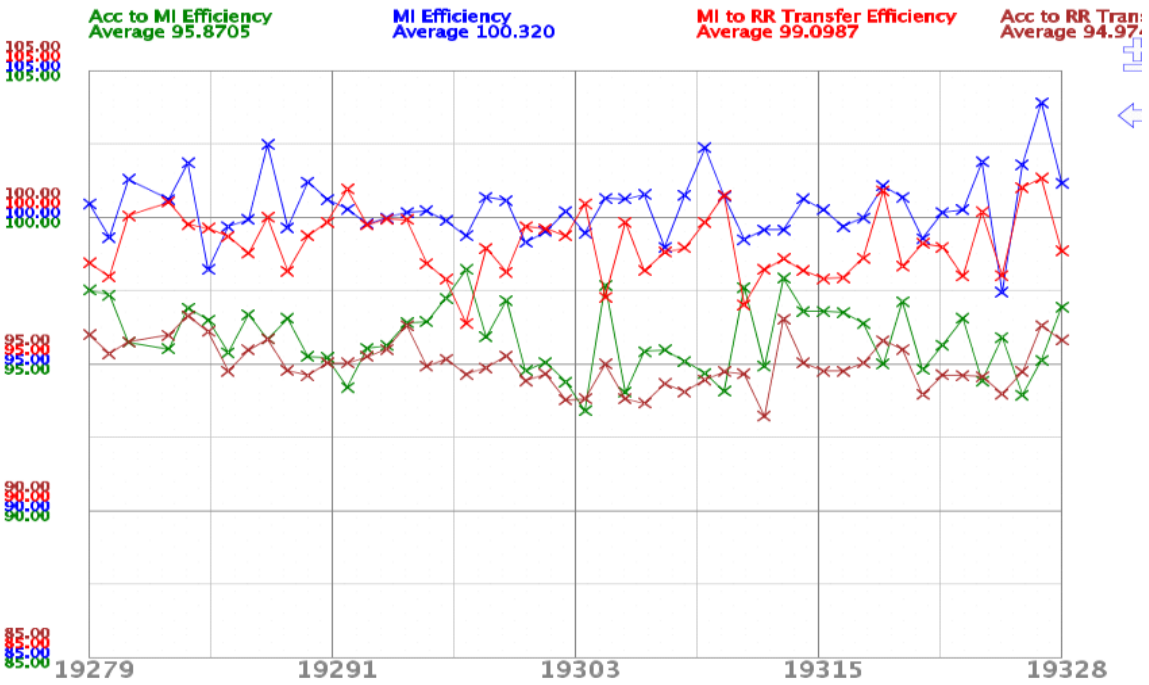

GxPA 1 Lumberjack Plot D:R1HLFB
Tue 01-JUN-2010 07:09:05
5.5
900
925
700
D:R1HLFB
◆Pbar2 MV
D:R1H6FB
.E_864 kV
5.25
825
875
675
D:R1H5FB
.Pbar2 kV
D:R1H7FB
.E_864 kV
5
750
825
650
4.75
675
775
625
4.5
600
725
600
28 08:00
29 08:00
30 08:00
31 08:00
01 08:00
T1 = Fr 28-MAY-2010 08:00:00
T2 = Tu 01-JUN-2010 08:00:00


GxPA 1 Lumberjack Plot D:BFIELD
Tue 01-JUN-2010 07:14:23
16915
1.5
1183
100
D:BFIELD
.Pbar2 Gaus
D:IBGNDI
.DZero mAmp
16912.5
1
1182.75
75
D:IBPSI
.RunCo Amp
D:LCWTOT
.Pbar Gal
16910
.5
1182.5
50
16907.5
0
1182.25
25
16905
-.5
1182
0
28 08:00
29 08:00
30 08:00
31 08:00
01 08:00
T1 = Fr 28-MAY-2010 08:00:00
T2 = Tu 01-JUN-2010 08:00:00

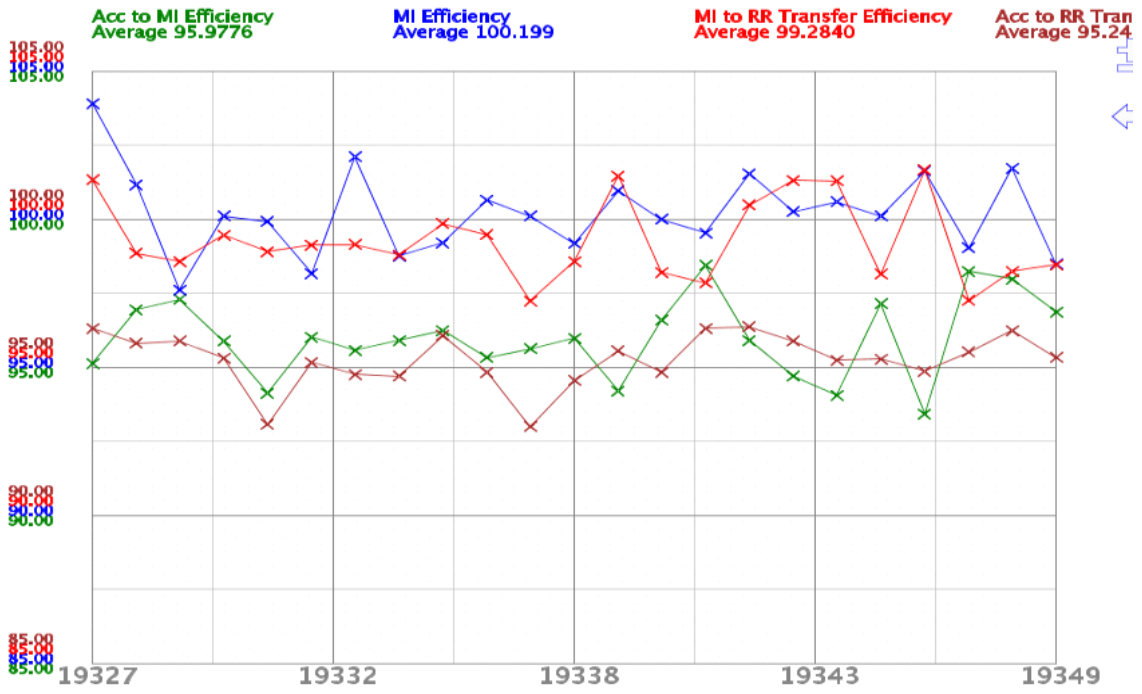

GxPA 1 Lumberjack Plot D:BFIELD
Tue 01-JUN-2010 07:19:55
16915
1.5
D:BFIELD
.Pbar2 Gaus
D:IBGNDI
.Pbar3 mAmp
16912.5
1
16910
.5
16907.5
0
16905
-.5
23 Tu
09 Fr
27 Tu
14 Fr
01 Tu
T1 = Tu 23-MAR-2010 08:00:00
T2 = Tu 01-JUN-2010 08:00:00



The Transfers Plots



Transfers Friday through Monday



Transfer Efficiency Monday through Tuesday

Column 1 Number_0_Pbar Transfer Shot #	Column 4 Number_3_Transfer Time		Column 21 Number_20_A:IBEAMB sampled on $91 (A:BEAM7), E10	Column 22 Number_21_A:IBEAMB sampled on $94 (A:BEAM9), E10	Unstacked (mA)	Column 23 Number_22_R:BEAMS (R:BEAME0[0]) pre xfer E10	Column 24 Number_23_R:BEAM (R:BEAME0[1]) post xfer, E10	Stashed	Acc to RR Eff	Acc to MI Eff	Acc to MI2 Eff	Transfers	Sets	Column 5 Number_4_Acc Horizontal Emittance	Column 6 Number_5_Acc Vertical Emittance	Column 8 Number_7_Acc Longitudinal Emittance
	Totals =>				1759.57	439.89		1668.56	94.83%	96.03%	96.20%	216	70	5.54	6.0351	1.9439
19349	Tuesday, June 01, 2010	6:55	24.69	6.00	21.00	278.21	298.15	20.07	95.54%	96.13%	95.30%	3	1	5.72	6.115	1.967
19348	Tuesday, June 01, 2010	5:58	25.40	4.04	22.56	257.20	278.79	21.69	96.17%	98.01%	99.28%	3	1	4.738	5.684	1.894
19347	Tuesday, June 01, 2010	4:52	24.43	5.74	20.95	237.78	257.73	20.04	95.67%	97.64%	97.16%	3	1	5.624	6.084	1.965
19346	Tuesday, June 01, 2010	3:58	24.50	5.92	20.91	218.31	238.13	19.89	95.11%	94.48%	96.04%	3	1	5.622	5.917	1.924
19345	Tuesday, June 01, 2010	3:05	24.52	6.10	20.74	198.86	218.57	19.84	95.66%	97.44%	97.47%	3	1	5.184	5.418	1.95
19344	Tuesday, June 01, 2010	2:10	25.04	5.90	21.38	178.79	199.12	20.34	95.14%	94.43%	94.73%	3	1	5.876	5.999	1.96
19343	Tuesday, June 01, 2010	1:17	25.91	6.17	22.03	157.99	179.04	21.12	95.85%	94.60%	95.02%	3	1	5.654	5.961	1.946
19342	Tuesday, June 01, 2010	0:19	24.02	5.42	20.73	138.46	158.25	19.94	96.19%	96.17%	97.43%	3	1	5.303	5.675	1.97
19341	Monday, May 31, 2010	23:21	27.27	3.10	24.93	114.70	138.64	24.00	96.25%	98.18%	97.61%	3	1	4.163	4.874	1.838
19340	Monday, May 31, 2010	22:21	28.16	6.45	24.07	91.98	114.86	22.87	95.00%	96.94%	96.48%	3	1	6.025	6.283	1.951
19339	Monday, May 31, 2010	21:19	27.47	6.20	23.61	69.67	92.13	22.52	95.41%	94.64%	95.02%	3	1	5.823	6.097	1.923
19338	Monday, May 31, 2010	20:31	26.70	10.81	18.30	52.51	69.78	17.34	94.73%	96.05%	95.23%	3	1	5.149	5.568	1.779
19337	Monday, May 31, 2010	19:26	55.07	6.51	51.83	6.31	53.55	47.45	91.55%	94.57%	94.47%	4	1	6.882	6.886	1.884
19336	Monday, May 31, 2010	17:01	27.30	6.04	23.51	333.09	355.21	22.33	95.01%	95.38%	95.58%	3	1	5.764	6.209	1.918
19335	Monday, May 31, 2010	16:00	26.40	5.78	22.78	312.91	334.43	21.81	95.73%	96.39%	96.08%	3	1	5.242	6.013	1.921
19334	Monday, May 31, 2010	15:03	27.12	6.17	23.18	292.21	313.96	21.93	94.59%	96.60%	95.27%	3	1	5.757	6.01	1.975
19333	Monday, May 31, 2010	13:59	26.68	5.94	22.87	271.67	293.17	21.65	94.70%	95.86%	97.67%	3	1	5.791	6.462	1.948
19332	Monday, May 31, 2010	13:00	27.51	5.80	23.80	250.03	272.44	22.59	94.92%	96.14%	95.00%	3	1	5.634	6.079	1.916
19331	Monday, May 31, 2010	11:59	30.46	6.25	26.40	226.31	250.74	24.56	93.03%	94.39%	94.63%	3	1	5.629	6.124	1.9
19330	Monday, May 31, 2010	10:45	27.27	5.95	23.57	204.82	227.10	22.44	95.22%	96.38%	95.79%	3	1	5.579	6.198	1.954
19329	Monday, May 31, 2010	9:45	26.10	6.08	22.28	184.05	205.28	21.34	95.80%	97.78%	96.10%	3	1	5.671	6.1	1.973
19328	Monday, May 31, 2010	8:47	26.93	5.97	23.37	162.06	184.33	22.40	95.86%	97.45%	98.37%	3	1	5.699	5.792	1.961
19327	Monday, May 31, 2010	7:37	23.67	3.24	22.03	141.21	162.38	21.21	96.30%	96.19%	98.54%	3	1	3.772	4.696	1.875
19326	Monday, May 31, 2010	6:40	25.02	5.78	21.66	120.96	141.36	20.51	94.72%	94.95%	95.90%	3	1	5.268	6.102	1.956
19325	Monday, May 31, 2010	5:42	25.61	6.12	21.94	100.65	121.18	20.57	93.76%	96.03%	94.12%	3	1	5.35	5.83	1.952
19324	Monday, May 31, 2010	4:36	24.90	5.69	21.65	80.32	100.72	20.42	94.35%	93.95%	95.64%	3	1	5.523	6.062	1.985
19323	Monday, May 31, 2010	3:40	24.47	5.87	21.01	60.69	80.43	19.85	94.49%	96.61%	96.53%	3	1	5.728	6.103	1.99
19322	Monday, May 31, 2010	2:48	25.75	6.08	22.09	39.81	60.73	20.95	94.86%	95.63%	95.81%	3	1	5.689	6.253	1.975
19321	Monday, May 31, 2010	1:47	40.41	5.40	38.40	4.15	39.89	35.86	93.40%	94.49%	94.48%	4	1	6.219	6.542	1.957

19320	Monday, May 31, 2010	0:00	24.61	5.19	21.61	229.08	249.69	20.68	95.72%	97.33%	97.94%	3	1	5.112	5.877	1.985
19319	Sunday, May 30, 2010	23:05	25.06	5.59	21.85	208.66	229.43	20.99	96.05%	95.91%	96.75%	3	1	5.863	6.008	1.989
19318	Sunday, May 30, 2010	22:11	31.03	6.88	26.51	183.92	208.99	25.22	95.13%	96.25%	95.93%	3	1	6.121	6.367	1.947
19317	Sunday, May 30, 2010	20:57	40.42	5.64	38.25	148.51	184.34	36.05	94.25%	96.43%	96.44%	4	1	6.518	6.853	1.963
19316	Sunday, May 30, 2010	19:22	29.39	6.67	25.10	125.00	148.84	23.83	94.97%	97.21%	97.21%	3	1	5.953	6.709	1.945
19315	Sunday, May 30, 2010	18:12	45.36	5.58	43.09	84.91	125.37	40.60	94.23%	96.34%	96.89%	4	1	6.866	6.905	1.967
19314	Sunday, May 30, 2010	16:13	28.35	5.23	25.11	61.26	85.36	24.16	96.22%	97.65%	97.83%	3	1	5.113	5.819	1.94
19313	Sunday, May 30, 2010	15:01	61.45	5.98	59.81	6.49	61.39	55.15	92.22%	94.75%	94.69%	5	1	6.811	6.969	1.98
19312	Sunday, May 30, 2010	12:07	27.46	5.74	24.14	334.55	357.37	22.96	95.11%	97.29%	97.11%	3	1	5.257	6.026	1.942
19311	Sunday, May 30, 2010	11:04	26.99	5.49	23.87	313.04	335.58	22.62	94.79%	94.87%	95.95%	3	1	5.158	5.818	1.921
19310	Sunday, May 30, 2010	10:01	26.54	5.63	23.32	291.88	313.80	22.11	94.79%	95.61%	97.10%	3	1	5.291	5.474	1.937
19309	Sunday, May 30, 2010	8:57	27.49	5.83	24.08	270.03	292.58	22.67	94.15%	94.66%	95.42%	3	1	5.107	5.57	1.948
19308	Sunday, May 30, 2010	7:54	25.00	5.95	21.49	250.47	270.59	20.24	94.17%	95.29%	94.74%	3	1	5.334	5.608	1.958
19307	Sunday, May 30, 2010	6:58	25.52	5.83	22.16	230.26	250.87	20.74	93.61%	95.63%	96.12%	3	1	5.091	5.947	1.961
19306	Sunday, May 30, 2010	6:02	25.51	6.25	21.81	210.19	230.55	20.50	93.98%	94.87%	95.42%	3	1	5.02	5.848	1.992
19305	Sunday, May 30, 2010	4:52	28.09	4.83	25.04	186.99	210.56	23.74	94.80%	97.06%	97.69%	3	1	4.684	5.51	1.897
19304	Sunday, May 30, 2010	3:49	27.81	6.30	23.91	164.95	187.26	22.41	93.71%	93.93%	93.76%	3	1	5.748	6.467	1.929
19303	Sunday, May 30, 2010	2:48	24.44	5.80	21.05	145.46	165.18	19.80	94.06%	94.67%	95.10%	3	1	5.534	6.492	1.954
19302	Sunday, May 30, 2010	1:57	28.43	6.26	24.55	122.58	145.64	23.21	94.55%	95.09%	94.88%	3	1	6.001	6.175	1.943
19301	Sunday, May 30, 2010	0:49	26.58	6.43	22.60	101.63	122.82	21.31	94.30%	95.65%	94.80%	3	1	5.649	6.284	1.958
19300	Saturday, May 29, 2010	23:50	26.37	5.97	22.80	80.07	101.74	21.76	95.43%	96.38%	96.85%	3	1	5.856	6.18	1.955
19299	Saturday, May 29, 2010	22:50	28.30	6.31	24.42	57.06	80.16	23.16	94.84%	96.45%	96.67%	3	1	5.751	6.385	1.941
19298	Saturday, May 29, 2010	21:52	32.59	7.06	27.99	30.74	57.14	26.41	94.37%	97.82%	96.77%	3	1	6.061	6.6	1.958
19297	Saturday, May 29, 2010	20:42	33.48	7.24	28.67	3.60	30.82	27.32	95.29%	97.04%	97.21%	3	1	5.679	5.882	1.958
19296	Saturday, May 29, 2010	18:20	28.21	4.90	24.32	236.32	259.35	23.10	94.98%	96.46%	96.74%	3	1	5.029	5.412	1.985
19295	Saturday, May 29, 2010	17:16	29.84	6.41	25.86	212.26	236.84	24.83	96.03%	96.53%	96.65%	3	1	5.671	6.307	1.885
19294	Saturday, May 29, 2010	14:09	26.91	6.09	23.32	191.12	213.28	22.24	95.38%	96.58%	96.77%	3	1	5.456	6.288	1.97
19293	Saturday, May 29, 2010	13:09	28.43	5.93	25.03	167.57	191.38	23.88	95.41%	95.95%	96.05%	3	1	5.556	6.25	1.939
19292	Saturday, May 29, 2010	12:05	28.36	6.44	24.44	144.74	167.85	23.24	95.08%	95.22%	95.63%	3	1	5.529	6.078	1.984
19291	Saturday, May 29, 2010	11:03	29.39	6.38	25.46	120.86	145.00	24.18	94.98%	95.37%	96.54%	3	1	5.128	5.839	1.887
19290	Saturday, May 29, 2010	9:58	28.34	6.05	24.64	97.75	120.97	23.34	94.75%	95.95%	96.85%	3	1	5.567	5.711	1.969
19289	Saturday, May 29, 2010	8:57	30.33	6.45	26.35	73.07	97.86	24.93	94.59%	96.25%	95.80%	3	1	5.265	5.999	1.946
19288	Friday, May 28, 2010	23:11	25.23	5.63	21.88	52.93	73.87	20.96	95.80%	95.85%	98.28%	3	1	5.276	5.937	2.026
19287	Friday, May 28, 2010	22:13	25.94	5.55	22.69	31.39	52.98	21.63	95.34%	96.71%	96.55%	3	1	5.073	5.77	1.947
19286	Friday, May 28, 2010	21:17	37.12	7.64	31.80	1.47	31.45	30.07	94.58%	95.44%	95.03%	3	1	6.182	6.406	1.928
19285	Friday, May 28, 2010	19:44	25.37	5.87	21.99	119.66	140.65	21.10	95.93%	96.88%	95.62%	3	1	5.512	6.09	1.979
19284	Friday, May 28, 2010	18:52	26.04	6.34	22.12	98.69	119.86	21.34	96.45%	96.89%	98.47%	3	1	5.483	5.8	1.932
19283	Friday, May 28, 2010	17:54	25.51	5.61	22.42	77.36	98.84	21.56	96.17%	96.27%	96.52%	3	1	5.154	5.989	1.965
19281	Friday, May 28, 2010	16:58	25.46	5.96	22.09	56.26	77.49	21.22	96.07%	96.61%	96.87%	3	1	5.311	5.679	1.956
19280	Friday, May 28, 2010	16:05	31.72	6.77	27.51	30.32	56.43	26.20	95.22%	97.42%	96.94%	3	1	5.631	6.111	1.929
19279	Friday, May 28, 2010	14:46	33.53	5.67	30.91	1.05	30.39	29.58	95.68%	97.36%	97.34%	3	1	5.324	5.885	1.874

The Photos

AP50 AC unit leak

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